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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,827	07/14/2003	Shoichi Osada	0171-0990P	5224

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EXAMINER

ZIMMER, MARC S

ART UNIT PAPER NUMBER

1712

DATE MAILED: 01/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/617,827

Applicant(s)

OSADA ET AL.

Examiner

Marc S. Zimmer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☒ Certified copies of the priority documents have been received in Application No. 09/558,384.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda et al., WO 99/01507 in view of Shiobara et al., U.S. Patent # 5,225,484.

Applicant is advised that U.S. Patent No. 6,190,787 is being used as an English language equivalent and all citations of column and line are those taken from the U.S. document.

Maeda et al. disclose a composition for encapsulating a semiconductor device comprising 1) an epoxy resin 2) a phenolic curing agent, 3) a nitrogen-containing curing catalyst, 4) a filler, and 5) supported zinc molybdate. Comprehensive lists of suitable epoxy resins and curing agents are presented in column 3, lines 52-67 and column 7, lines 50-60 respectively. Relevant to claim 2, the molar ratio of epoxy resin-to-phenol curative is 0.8 to 1.3 (column 4, lines 60-64). This composition exhibits a desirable level of flame-resisting properties that may be ascribed (column 5, lines 30-32) to the presence of the zinc molybdate component, which is described in column 6, lines 9-18. Maeda proposes a mechanism for the flame-retarding action of said compound column 5, lines 39-45. There is no suggestion, however, of the incorporation of a siloxane polymer of any of the three classes set forth in claim 1.

Shiobara et al. also teach an epoxy resin that is similar to the instant invention in most respects. Like Maeda, the intended use of their composition is as an encapsulant for semiconductors. The specific problem addressed by their invention is the tendency of the prior

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art epoxy resins to crack when subjected to intense heat (column 1, lines 10-16). Their solution involves the incorporation of two distinct organosilicon compounds. The first compound, a hydrolyzable silane containing functional groups that are reactive towards oxirane rings, is dispersed into the composition as a constituent of an elastomeric microparticle. The elastomers entertained by Shiobara include polybutadiene, polyisoprene, rubbery terpolymers of styrene, etc. Further, an epoxy-silicone copolymer, the hydrosilylation product of an organohydrogensiloxane and an epoxy resin bearing unsaturated carbon-carbon double bonds (column 4, lines 38-56), is added to assure a lowered coefficient of expansion and, thus, improved crack resistance (column 7, lines 24-30). Given the similarities between the inventions of Maeda and Shiobara, it would have been obvious to one having ordinary skill that the composition taught by Maeda could be improved with respect to crack resistance by adding a siloxane (co)polymer according to the teachings of Shiobara.

As for claim 5, Maeda et al. use an alternative way of expressing the zinc molybdate content that stipulates its weight as a percentage of the entire composition (column 6, lines 14-25). Nonetheless, they emphasize the adverse consequences of adding this component in quantities that are too large and small alike. Therefore, one having ordinary skill would, as a matter of routine experimentation, optimize the amount of this component to obtain a composition having the desired properties.

As for claims 6 and 7, Applicants suggest adding the epoxy-silicone ingredient in an amount that overlaps the range offered by Applicant (column 7, lines 39-43). See also Examples 6, 8, and 11 of Table 2.

The recent prior art discloses repeatedly the utilization of supported zinc molybdate as an additive for improving flame retardance many of which documents are assigned to the same assignee as is the present case. See, for instance, U.S. Patent Nos. 6,518,332, 6,297,306, and 6,361,866. These references, likewise, could represent a basis of rejection in combination with the teachings of Shiobara. Ultimately, the Examiner has elected not to formulate statements of rejection over these documents at this time for brevity and because all of the aforementioned documents are 102(e) references that are easily overcome by statements of common ownership and/or submission of a translated priority document.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc S. Zimmer whose telephone number is 571-272-1096. The examiner can normally be reached on Monday-Friday 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

January 22, 2004



Marc Zimmer  
AU 1712